

In the Claims:

1. (Original) A method for automatic discovery of logical links associated with network devices comprising the steps of:

selecting a first managed network device having a first network interface, said first network device being managed by a network management system;

determining a local interface address and a next neighbor address associated with said first network interface;

comparing said local interface address and next neighbor address with endpoint address information associated with a plurality of logical links stored in a logical link database associated with said network management system;

creating a first logical link between said local interface address and said next neighbor address;

storing said first logical link in said logical link database;

displaying a graphical representation of said first logical link on a display device.

2. (Original) The method of claim 1 further comprising the step of comparing said next neighbor address with a managed devices database associated with said network management system.

3. (Original) The method of claim 2 further comprising the steps of:

determining that said next neighbor address is associated with a second managed network device;

identifying said first logical link as a logical link between managed network devices.

4. (Original) The method of claim 2 further comprising the steps of:

determining that said next neighbor address is not associated with a managed network device;

identifying said first logical link as a logical link between a managed network device and a network address.

5. (Original) The method of claim 1 wherein said next neighbor address comprises a subnet address and further comprising the step of identifying said first logical link as a logical link between a managed network device and a subnet.

6. (Original) The method of claim 1 wherein said step of creating said first logical link comprises the step of deleting a second logical link in said logical link database.

7. (Previously Presented) The method of claim 6 wherein said second logical link comprises first and second endpoint address information, said first endpoint address information comprising said next neighbor address and said second endpoint address information comprising said local interface address.

8. (Previously Presented) The method of claim 7 wherein said logical link database identifies said first endpoint address information as being associated with a network device being managed by a network management system and said second endpoint address information as being associated with a network address.

9. (Original) The method of claim 1 further comprising the step of determining that said local interface address is not associated with any logical link in said logical link database prior to creating said first logical link.

10. (Original) The method of claim 1 further comprising the step of determining that said next neighbor address is not associated with any logical link in said logical link database prior to creating said first logical link.

11. (Original) The method of claim 1 further comprising the step of determining that said next neighbor address and said local interface address are not both associated with any logical link in said logical link database prior to creating said first logical link.

12. (Original) The method of claim 1 wherein said local interface address comprises a network address assigned to a port of said first managed network device.

13. (Original) The method of claim 3 wherein said next neighbor address comprises a network address assigned to a port of said second managed network device.

14. (Original) The method of claim 3 wherein said next neighbor address comprises a network address assigned to said second managed network device.

15. (Original) The method of claim 14 wherein said local interface address comprises a network address assigned to said first managed network device and a port number of said first managed network device.

16. (Original) The method of claim 15 wherein said logical link comprises a logical link between unnumbered interfaces.

17. (Original) The method of claim 3 wherein said step of displaying said graphical representation of said first logical link comprises displaying a representation of an arrow from said first managed network device to said second managed network device.

18. (Original) The method of claim 4 wherein said step of displaying said graphical representation of said first logical link comprises displaying a representation of an arrow from said first managed network device to a representation of said next neighbor address.

19. (Original) The method of claim 5 wherein said step of displaying said graphical representation of said first logical link comprises displaying a representation of an arrow from said first managed network device to a representation of a subnet.

20. (Original) The method of claim 1 wherein said local interface address comprises a port number of said first network interface and a first IP address of said first managed network device.

21. (Original) The method of claim 20 wherein said next neighbor address comprises a second IP address.

22. (Original) The method of claim 21 wherein said second IP address comprises an IP address of a third managed network device.

23. (Original) The method of claim 21 wherein said second IP address comprises an IP address assigned to a second network interface of said third managed network device.

24. (Original) The method of claim 1 wherein said step of determining said local interface number and said next neighbor address for said first network interface comprises sending a first message from said network management system to said first managed network device and receiving a second message from said first managed network device in response to said first message.

25. (Original) The method of claim 1 wherein said step of determining said local interface number and said next neighbor address for said first network interface comprises receiving a first message from said first managed network device initiated by said first managed network device upon said first network interface being configured.

26. (Original) The method of claim 24 wherein said first and second messages comprise messages using the SNMP protocol.

27. (Original) The method of claim 25 wherein said first message comprises a message using the SNMP protocol.

28. (Original) The method of claim 1 further comprising the step of determining a first communications protocol used by said first network interface.

29. (Original) The method of claim 28 wherein said first logical link is identified in said logical link database as a logical link utilizing said first communications protocol.

30. (Original) The method of claim 28 further comprising the step of determining a second communications protocol used by said first network interface.

31. (Original) The method of claim 30 wherein said first logical link is identified in said logical link database as a logical link utilizing said first and second communications protocols.

32. (Original) A method for automatic discovery of logical links associated with network devices comprising the steps of:

selecting a first managed network device having a first network interface, said first network device being managed by a network management system;

determining a local interface address and a next neighbor address associated with said first network interface;

comparing said local interface address and next neighbor address with endpoint address information associated with a plurality of logical links stored in a logical link database associated with said network management system;

determining that said local interface address and next neighbor address are both associated with endpoint address information for a first logical link stored in said logical link database.

33. (Original) The method of claim 32 further comprising the step of:

verifying that said first logical link comprises a logical link between said first network interface and said next neighbor address.

34. (Original) The method of claim 33 wherein said verifying step comprises the steps of:

identifying said next neighbor address as an address associated with a second managed network device;

obtaining a local interface address and a next neighbor address for a second network interface of said second managed network device;

comparing said local interface address and next neighbor address of said second network interface to said local interface address and said next neighbor address of said first network interface.

35. (Original) An apparatus for discovering logical links associated with network devices

comprising:

a network management system comprising:

a database of managed network devices;

a database of logical links associated with said managed network devices;

a network communications system for sending messages to managed network devices and receiving messages from said managed network devices;

a message analysis system for determining local interface address information and next neighbor address information from messages received from said managed network devices.

36. (Original) The apparatus of claim 35 further comprising a logical link display for

displaying said logical links.

37. (Original) The apparatus of claim 35 further comprising a logical link creation system

for creating logical links for storage in said logical links database.

38. (Original) The apparatus of claim 37 further comprising a logical link information comparison system for comparing local interface address information and next neighbor address information obtained from messages received by from said managed network devices with endpoint information for said logical links stored in said logical links database.

39. (Original) The apparatus of claim 35 wherein said network communications system comprises means for sending and receiving messages utilizing the SNMP protocol.

40. (Original) The apparatus of claim 35 further comprising a managed network device identification system for identifying managed network devices associated with said next neighbor address information received from said managed network devices.

41. (New) Apparatus comprising:
a first managed network device having a first network interface;
a network management system, said network management system managing said first network device, wherein said network management system selects said first managed network device, determines a local interface address and a next neighbor address associated with said first network interface; compares said local interface address and next neighbor address with endpoint address information associated with a plurality of logical links stored in a logical link database associated with said network management system; creates a first logical link between said local interface address and said next neighbor address; stores said first logical link in said logical link database; and displays a graphical representation of said first logical link on a display device.